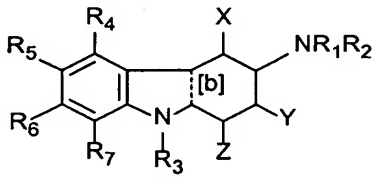
Amendments to the Claims

This listing of claims will replace all prior listings of claims in the application.

Listing of Claims

1. (Currently Amended) A compound of formula I



Formula I

wherein

---[b] is a single or double bond;

Each X, Y, and Z is independently selected from H, -OH, -O-alkyl, and -O-substituted alkyl;

R_1 is selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, and aryl;

R_2 is selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, and aryl;

R_3 is ~~selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, and~~ -A-E-R_8;

A is selected from alkyl and substituted alkyl;

E is selected from $-N(R_{10})C(O)-$, $-C(O)N(R_{10})-$, $-N(R_{10})C(S)-$, $-C(S)N(R_{10})-$, $-S(O)N(R_{10})-$, $-N(R_{10})S(O)-$, $-S(O)_2N(R_{10})-$, and $-N(R_{10})S(O)_2-$;

Each R_4, R_5, R_6, and R_7 is independently selected from H, halogen, aryl, -CN, $-NO_2$, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, $-OR_9$, $-NH_2$, $-C(O)NH_2$, $-C(S)NH_2$, and $-S(O)_n$aryl, provided that one of R_4, R_5, R_6, and R_7 is $-S(O)_n$aryl, and that at least one of R_4, R_5, R_6, and R_7 is H;

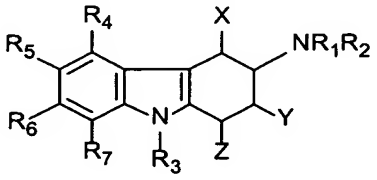
n is 0, 1, or 2;

Each R_8, R_9, and R_{10} is independently selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, and aryl;

Each R_{11} is independently selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heterocycloalkyl, phenyl, naphthyl, and heteroaromatic, provided that any of the alkyl, cycloalkyl, phenyl, naphthyl, or heteroaromatic is optionally substituted with up to 3 substituents independently selected from halogen, alkyl, $-CF_3$, $-OR_{12}$, $-SR_{12}$, $-CN$, $-NO_2$, $-N_3$, $-N(R_{12})_2$, $-C(O)N(R_{12})_2$, and $-C(S)N(R_{12})_2$;

Each R_{12} is independently selected from H, alkyl, and cycloalkyl, provided that any of the alkyl or cycloalkyl is optionally substituted with up to 2 substituents independently selected from halogen, $-CF_3$, $-NO_2$, $-NH_2$, $-N_3$, $-CN$, $-OH$, -O-lower alkyl, and -O-lower substituted alkyl; and pharmaceutically acceptable salts thereof.

2. (Currently Amended) A compound of Claim 1 having the Formula Ib



Formula Ib

wherein

Each X, Y, and Z is independently selected from H, -OH, -O-alkyl, and -O-substituted alkyl;

R_1 is selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, and aryl;

R_2 is selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, and aryl;

R_3 is ~~selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, and~~ -A-E-R_8;

A is selected from alkyl and substituted alkyl;

E is selected from $-N(R_{10})C(O)-$, $-C(O)N(R_{10})-$, $-N(R_{10})C(S)-$, $-C(S)N(R_{10})-$, $-S(O)N(R_{10})-$, $-N(R_{10})S(O)-$, $-S(O)_2N(R_{10})-$, and $-N(R_{10})S(O)_2-$;

Each R_4, R_5, R_6, and R_7 is independently selected from H, halogen, aryl, -CN, $-NO_2$, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, $-OR_9$, $-NH_2$, $-C(O)NH_2$, $-C(S)NH_2$, and $-S(O)_n$aryl, provided that one of R_4, R_5, R_6, and R_7 is $-S(O)_n$aryl, and that at least one of R_4, R_5, R_6, and R_7 is H;

n is 0, 1, or 2;

Each R_8, R_9, and R_{10} is independently selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, and aryl;

Each R_{11} is independently selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heterocycloalkyl, phenyl, naphthyl, and heteroaromatic, provided that any of the alkyl, cycloalkyl, phenyl, naphthyl, or heteroaromatic is optionally substituted with up to 3 substituents independently selected from halogen, alkyl, $-CF_3$, $-OR_{12}$, $-SR_{12}$, -CN, $-NO_2$, $-N_3$, $-N(R_{12})_2$, $-C(O)N(R_{12})_2$, and $-C(S)N(R_{12})_2$;

Each R_{12} is independently selected from H, alkyl, and cycloalkyl, provided that any of the alkyl or cycloalkyl is optionally substituted with up to 2 substituents independently selected from halogen, $-CF_3$, $-NO_2$, $-NH_2$, $-N_3$, -CN, -OH, -O-lower alkyl, and -O-lower substituted alkyl; and pharmaceutically acceptable salts thereof.

3. (Original) The compound of Claim 2, wherein one of R_1 and R_2 is H, and the other is H, alkyl, or substituted alkyl.

4. (Original) The compound of Claim 3, wherein R_5 is $arylS(O)_n-$, and wherein R_4, R_6, and R_7 are H.

5. (Canceled)

6. (Canceled)

7. (Canceled)

8. (Canceled)

9. (Canceled)

10. (Original) A pharmaceutical composition comprising a compound according to Claim 2.

11. (Original) A method for treating a disease or condition in a mammal in need thereof, wherein the 5-HT_6 receptor is implicated, comprising administering to the mammal a therapeutically effective amount of compound according to Claim 2.

12. (Original) The method according to Claim 11, wherein the disease or condition is anxiety, depression, schizophrenia, Alzheimer's disease, stress-related disease, panic, a phobia, obsessive compulsive disorder, obesity, post-traumatic stress syndrome, or epilepsy.

13. (Original) The method according to Claim 11, wherein said compound is administered rectally, topically, orally, sublingually, or parenterally.

14. (Original) The method according to Claim 11, wherein said compound is administered from about 0.001 to about 100 mg/kg of body weight of said mammal per day.

15. (Original) The method according to Claim 11, wherein said compound is administered from about 0.1 to about 50 mg/kg of body weight of said mammal per day.

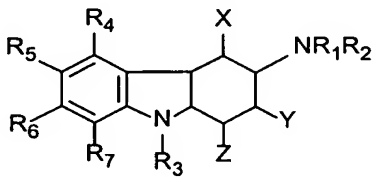
16. (Original) The compound of Claim 2, wherein the compound includes at least one atom selected from Carbon-11, Nitrogen-13, Oxygen-15, and Fluorine-18.

17. (Currently Amended) A method of performing positron emission tomography comprising:

incorporating an isotopically labeled compound into tissue of a mammal, wherein the isotopically labeled compound is selected from a compound of Formula Ib as defined in ~~Claim 1~~Claim 2.

18. (Canceled)

19. (Currently Amended) A compound of Claim 1 having the Formula Ia



Formula Ia

wherein

Each X, Y, and Z is independently selected from H, -OH, -O-alkyl, and -O-substituted alkyl;

R_1 is selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, and aryl;

R_2 is selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, and aryl;

R_3 is ~~selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, and~~ -A-E-R_8;

A is selected from alkyl and substituted alkyl;

E is selected from $-N(R_{10})C(O)-$, $-C(O)N(R_{10})-$, $-N(R_{10})C(S)-$, $-C(S)N(R_{10})-$, $-S(O)N(R_{10})-$, $-N(R_{10})S(O)-$, $-S(O)_2N(R_{10})-$, and $-N(R_{10})S(O)_2-$;

Each R_4, R_5, R_6, and R_7 is independently selected from H, halogen, aryl, $-CN$, $-NO_2$, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, $-OR_9$, $-NH_2$, $-C(O)NH_2$, $-C(S)NH_2$, and $-S(O)_n$aryl, provided that one of R_4, R_5, R_6, and R_7 is $-S(O)_n$aryl, and that at least one of R_4, R_5, R_6, and R_7 is H;

n is 0, 1, or 2;

Each R_8, R_9, and R_{10} is independently selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, and aryl;

Each R_{11} is independently selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heterocycloalkyl, phenyl, naphthyl, and heteroaromatic, provided that any of the alkyl, cycloalkyl, phenyl, naphthyl, or heteroaromatic is optionally substituted with up to 3 substituents independently selected from halogen, alkyl, $-CF_3$, $-OR_{12}$, $-SR_{12}$, $-CN$, $-NO_2$, $-N_3$, $-N(R_{12})_2$, $-C(O)N(R_{12})_2$, and $-C(S)N(R_{12})_2$;

Each R_{12} is independently selected from H, alkyl, and cycloalkyl, provided that any of the alkyl or cycloalkyl is optionally substituted with up to 2 substituents independently selected from halogen, $-CF_3$, $-NO_2$, $-NH_2$, $-N_3$, $-CN$, $-OH$, -O-lower alkyl, and -O-lower substituted alkyl; and pharmaceutically acceptable salts thereof.

20. (Original) The compound of Claim 19, wherein one of R_1 and R_2 is H, and the other is H, alkyl, or substituted alkyl.

21. (Original) The compound of Claim 20, wherein R_5 is $arylS(O)_n-$, and wherein R_4, R_6, and R_7 are H.

22. (Original) The compound of Claim 21, wherein n is 2.

23. (Canceled)

24. (Canceled)

25. (Canceled)

26. (Canceled)

27. (Original) A pharmaceutical composition comprising a compound according to Claim 19.

28. (Original) A method for treating a disease or condition in a mammal in need thereof, wherein the $5\text{-}HT_6$ receptor is implicated, comprising administering to the mammal a therapeutically effective amount of compound according to Claim 19.

29. (Original) The method according to Claim 28, wherein the disease or condition is anxiety, depression, schizophrenia, Alzheimer's disease, stress-related disease, panic, a phobia, obsessive compulsive disorder, obesity, post-traumatic stress syndrome, or epilepsy.

30. (Original) The method according to Claim 28, wherein said compound is administered rectally, topically, orally, sublingually, or parenterally.

31. (Original) The method according to Claim 28, wherein said compound is administered from about 0.001 to about 100 mg/kg of body weight of said mammal per day.

32. (Original) The method according to Claim 28, wherein said compound is administered from about 0.1 to about 50 mg/kg of body weight of said mammal per day.

33. (Original) The compound of Claim 19, wherein the compound includes at least one atom selected from Carbon-11, Nitrogen-13, Oxygen-15, and Fluorine-18.

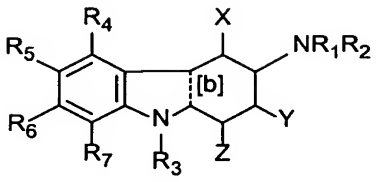
34. (Original) A method of performing positron emission tomography comprising:

incorporating an isotopically labeled compound into tissue of a mammal, wherein the isotopically labeled compound is selected from Claim 19.

35. (Canceled)

36. (New) A method of performing positron emission tomography comprising

incorporating an isotopically labeled compound into tissue of a mammal, wherein the isotopically labeled compound is selected from a compound of Formula Ib



Formula Ib

wherein

---[b] is a single or double bond;

Each X, Y, and Z is independently selected from H, -OH, -O-alkyl, and -O-substituted alkyl;

R_1 is selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, and aryl;

R_2 is selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, and aryl;

R_3 is selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, and -A-E-R_8;

A is selected from alkyl and substituted alkyl;

E is selected from $-N(R_{10})C(O)-$, $-C(O)N(R_{10})-$, $-N(R_{10})C(S)-$, $-C(S)N(R_{10})-$, $-S(O)N(R_{10})-$, $-N(R_{10})S(O)-$, $-S(O)_2N(R_{10})-$, and $-N(R_{10})S(O)_2-$;

Each R_4, R_5, R_6, and R_7 is independently selected from H, halogen, aryl, -CN, $-NO_2$, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, $-OR_9$, $-NH_2$, $-C(O)NH_2$, $-C(S)NH_2$, and $-S(O)_n$aryl, provided that one of R_4, R_5, R_6, and R_7 is $-S(O)_n$aryl, and that at least one of R_4, R_5, R_6, and R_7 is H;

n is 0, 1, or 2;

Each R_8, R_9, and R_{10} is independently selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, and aryl;

Each R_{11} is independently selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heterocycloalkyl, phenyl, naphthyl, and heteroaromatic, provided that any of the alkyl, cycloalkyl, phenyl, naphthyl,

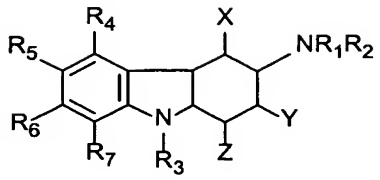
or heteroaromatic is optionally substituted with up to 3 substituents independently selected from halogen, alkyl, $-CF_3$, $-OR_{12}$, $-SR_{12}$, $-CN$, $-NO_2$, $-N_3$, $-N(R_{12})_2$, $-C(O)N(R_{12})_2$, and $-C(S)N(R_{12})_2$;

Each R_{12} is independently selected from H, alkyl, and cycloalkyl, provided that any of the alkyl or cycloalkyl is optionally substituted with up to 2 substituents independently selected from halogen, $-CF_3$, $-NO_2$, $-NH_2$, $-N_3$, $-CN$, $-OH$, -O-lower alkyl, and -O-lower substituted alkyl; and pharmaceutically acceptable salts thereof.

37. (New) The method according to Claim 36, wherein the compound is selected from
6-(phenylsulfonyl)-2,3,4,9-tertrahydro-1*H*-carbazol-3-amine;
(3*S*)-6-(phenylsulfonyl)-2,3,4,9-tertrahydro-1*H*-carbazol-3-amine;
(3*R*)-6-(phenylsulfonyl)-2,3,4,9-tertrahydro-1*H*-carbazol-3-amine;
(3*S*)-9-methyl-6-(phenylsulfonyl)-2,3,4,9-tertrahydro-1*H*-carbazol-3-amine;
(3*R*)-9-methyl-6-(phenylsulfonyl)-2,3,4,9-tertrahydro-1*H*-carbazol-3-amine; or
(3*R*)-*N*,9-dimethyl-6-(phenylsulfonyl)-2,3,4,9-tetrahydro-1*H*-carbazol-3-amine.

38. (New) A method of performing positron emission tomography comprising

incorporating an isotopically labeled compound into tissue of a mammal, wherein the isotopically labeled compound is selected from a compound having the Formula Ia



Formula Ia

wherein

Each X, Y, and Z is independently selected from H, -OH, -O-alkyl, and -O-substituted alkyl;

R_1 is selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, and aryl;

R_2 is selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, and aryl;

R_3 is selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, and -A-E-R_8;

A is selected from alkyl and substituted alkyl;

E is selected from $-N(R_{10})C(O)-$, $-C(O)N(R_{10})-$, $-N(R_{10})C(S)-$, $-C(S)N(R_{10})-$, $-S(O)N(R_{10})-$, $-N(R_{10})S(O)-$, $-S(O)_2N(R_{10})-$, and $-N(R_{10})S(O)_2-$;

Each R_4, R_5, R_6, and R_7 is independently selected from H, halogen, aryl, -CN, $-NO_2$, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, $-OR_9$, $-NH_2$, $-C(O)NH_2$, $-C(S)NH_2$, and $-S(O)_n$aryl, provided that one of R_4, R_5, R_6, and R_7 is $-S(O)_n$aryl, and that at least one of R_4, R_5, R_6, and R_7 is H;

n is 0, 1, or 2;

Each R_8, R_9, and R_{10} is independently selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, and aryl;

Each R_{11} is independently selected from H, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, heterocycloalkyl, phenyl, naphthyl, and heteroaromatic, provided that any of the alkyl, cycloalkyl, phenyl, naphthyl, or heteroaromatic is optionally substituted with up to 3 substituents independently selected from halogen, alkyl, $-CF_3$,

$-OR_{12}$, $-SR_{12}$, -CN, $-NO_2$, $-N_3$, $-N(R_{12})_2$, $-C(O)N(R_{12})_2$, and $-C(S)N(R_{12})_2$;

Each R_{12} is independently selected from H, alkyl, and cycloalkyl, provided that any of the alkyl or cycloalkyl is optionally substituted with up to 2 substituents independently selected from halogen, $-CF_3$, $-NO_2$, $-NH_2$, $-N_3$, -CN, -OH, -O-lower alkyl, and -O-lower substituted alkyl; and pharmaceutically acceptable salts thereof.

39. (New) The method according to Claim 38, wherein the isotopically labeled compound is selected from (3*R*)-9-methyl-6-(phenylsulfonyl)-2,3,4,4a,9,9a-hexahydro-1*H*-carbazol-3-amine or a pharmaceutically acceptable salt thereof.